

Table 1-Continued

Test No. Polybutadiene Derivative Vinyl Compound	6 f Ethyleneglycol dimethacrylate 10%	7 g Ethyleneglycol dimethacrylate 20%	Reference Example 1 A-7 Ethyleneglycol dimethacrylate 20%	
Results of Test	Appearance	light yellow, transparent	light yellow, transparent	light yellow, transparent
	Shore Hardness-D	87	76	75
	Bending Strength*	760	720	420

* Note: Measurement of bending strength was based on ASTM D-790.

Table 2

Test No. Polybutadiene Derivative	8 a	9 b	Reference Example 2 A-8	
Conditions of Irradiation	Voltage	2.0 MeV	2.0 MeV	2.0 MeV
	Current	1 mA	2 mA	5 mA
	Dose Rate	0.1 Mrad/sec	0.2 Mrad/sec	0.5 Mrad/sec
	Linear Velocity	4.5 cm/sec	4.5 cm/sec	4.5 cm/sec
	Distance between Radiation Source and Exposed Matter	about 20 cm	about 20 cm	about 20 cm
	Total Radiation Dose	3 Mrad	6 Mrad	10 Mrad
Film Thickness	20 μ	20 μ	20 μ	
Pencil Hardness	3H	3H	2B	
Bending Strength (2 mm ϕ)	0	0	X	
Results of Test	Front			
	Du Pont	50 cm	50 cm	30 cm
	Shock Resistance	50 cm	50 cm	10 cm

Note 1.

Test Method

Pencil Hardness: TIS K-5651, used Mitsubishi UNI Pencil

Bending Strength: TIS-5400

Du Pont Shock Resistance: 1/4" . 500 g

Note 2.

Marks for Judgement

0 Nothing unusual in painted film

X Cracking and/or Peering in Painted Film

Table 3

Test No. Polybutadiene Derivative Vinyl Compound	10 a Styrene 20% Acrylic Acid 2%	Reference Example 3 A-7 Styrene 20% Acrylic Acid 20%	
Conditions of Irradiation	Voltage Current Dose Rate Linear Velocity Distance between Radiation Source and Exposed Matter Total Radiation	2.0 MeV 1 mA 0.1 Mrad/sec 4.5 cm/sec about 20 cm 15 Mrad	MeV 5 mA 0.5 Mrad/sec 4.5 cm/sec about 20 cm
Dose	3 Mrad	15 Mrad	
Tensile Shearing Strength	Just After Curing After Heating at 180°C for 30 hours	120 kg/cm ² 105	76 kg/cm ² 58

What we claim is:

1. A process for preparing a polybutadiene derivative curable by means of an ionizing radiation, which comprises reacting a polymeric butadiene selected from a butadiene homopolymer, a butadiene copolymer and a mixture thereof, said polymeric butadiene having a number-average molecular weight of about 200-100,000 and containing a functional group having an active hydrogen and not less than about 30 percent of the butadiene units in said polymeric butadiene being 1,2-bond, with an isocyanate compound having an unsubstituted or substituted vinyl group, in the proportion of said isocyanate compound providing not less

than about 0.5 equivalent of the isocyanate group per said polymeric butadiene providing 1 equivalent of the active hydrogen.

2. A novel polybutadiene derivative curable by means of an ionizing radiation, the structure of which is represented by a reaction product of a polymeric butadiene selected from a butadiene homopolymer, a butadiene copolymer and a mixture thereof, said polymeric butadiene having a number-average molecular weight of about 200-100,000 and containing a functional group having an active hydrogen and not less than about 30 percent of the butadiene units in said polymeric butadiene being 1,2-bond, with an isocya-